

Claims

- [c1] 1. A wireless communication circuit architecture, suitable for use in a wireless local area network (WLAN) system operated in a transmitting mode and a receiving mode, the circuit architecture comprising:
- a first antenna and a second antenna, wherein the second antenna is also set to be used as a transmitting antenna;
 - an antenna switch, including a first input terminal and a second input terminal for respectively receiving signals from the first antenna and the second antenna as well as selecting one of the signals as an output;
 - a first filter, used to receive the output signal from the antenna switch;
 - a radio-frequency integrated circuit (RFIC) unit, used to receive an output signal from the first filter during the receiving mode as well as output a transmitting signal during the transmitting mode;
 - a power amplifier, used to receive the transmitting signal and amplify the transmitting signal;
 - a second filter, receiving the amplified transmitting signal to filter away an undesired frequency noise; and
 - a transmission/receiving (T/R) switch, receiving the transmitting signal from the second filter, wherein the T/R switch can also be switched to allow the signal received from the second antenna to be output to the second terminal of the antenna switch.
- [c2] 2. The circuit architecture of claim 1, wherein the first filter comprises a band pass filter.
- [c3] 3. The circuit architecture of claim 1, wherein the second filter comprises a band pass filter (BPF) with a low pass filter (LPF).
- [c4] 4. The circuit architecture of claim 1, wherein the second filter comprises only a low pass filter (LPF).
- [c5] 5. The circuit architecture of claim 1, further comprising a baseband/media-access-control (BB/MAC) unit coupled with the RFIC for inward communication.
- [c6] 6. The circuit architecture of claim 1, further comprising a BALUN circuit

between the first filter and the RFIC unit, so as to convert the output signal of the first filter into a differential signal for use in the RFIC unit.

- [c7] 7. The circuit architecture of claim 1, wherein the RFIC unit comprises a single operation frequency without an intermediate frequency.
- [c8] 8. The circuit architecture of claim 1, wherein the RFIC unit comprises an operation frequency within a range of industrial, scientific and medical (ISM) band.
- [c9] 9. The circuit architecture of claim 1, wherein the circuit architecture satisfies a protocol of IEEE 802.11b.
- [c10] 10. A wireless communication circuit architecture, suitable for use in a wireless local area network (WLAN) system operated in a transmitting mode and a receiving mode, the circuit architecture comprising:
a first antenna and a second antenna, wherein the second antenna is also set to be used as a transmitting antenna;
an antenna switch, including a first input terminal and a second input terminal for respectively receiving signals from the first antenna and the second antenna as well as selecting one of the signals as an output;
a band pass filter (BPF), used to receive the output signal from the antenna switch;
a radio-frequency integrated circuit (RFIC) unit without intermediate frequency voltage controlled oscillator (VCO), used to receive an output signal from the BPF during the receiving mode as well as output a transmitting signal during the transmitting mode;
a power amplifier, used to receive the transmitting signal and amplify the transmitting signal;
a low pass filter (LPF), receiving the amplified transmitting signal to filter away an undesired frequency noise; and
a transmission/receiving (T/R) switch, receiving the transmitting signal from the second filter, wherein the T/R switch can also be switched to allow the signal received from the second antenna to be output to the second terminal of the antenna switch.

- [c11] 11. The circuit architecture of claim 10, wherein the RFIC unit comprises an operation frequency within a range of industrial, scientific and medical (ISM) band or higher.
- [c12] 12. The circuit architecture of claim 1, wherein the circuit architecture satisfies a protocol of IEEE 802.11b.
- [c13] 13. A method for receiving a receiving radio-frequency (RF) signal and transmitting a transmitting RF signal, suitable for use in a wireless local area network (WLAN) system operated in a transmitting mode and a receiving mode, the method comprising:
 providing a first antenna and a second antenna, wherein the second antenna is also set to be used as a transmitting antenna during the transmitting mode;
 during the receiving mode, performing the steps of:
 selecting one of the first antenna and the second antenna to receive the receiving RF signal;
 filtering the receiving RF signal by a first filter at a first noise frequency range;
 and
 sending the filtered to a RF integrated circuit (RFIC) unit for processing; and
 during the transmitting mode, performing the steps of:
 transmitting the transmitting RF signal from the RFIC unit;
 amplifying the transmitting RF signal;
 filtering the amplified transmitting RF signal by a second filter at a second noise frequency range;
 transmitting the amplified transmitting RF signal through the second antenna, without passing through the first filter.
- [c14] 14. The method of claim 13, wherein in the step of filtering the receiving RF signal, the first filter comprises a band pass filter.
- [c15] 15. The method of claim 13, wherein in the step of filtering the amplified transmitting RF signal, the second filter comprises a combination of a band pass filter (BPF) or a low pass filter (LPF).
- [c16] 16. The method of claim 13, wherein in the step of filtering the amplified

transmitting RF signal, the second filter only comprises the LPF.

- [c17] 17. The method of claim 13, wherein the RFIC unit does not include an operation signal in intermediate frequency.
- [c18] 18. The method of claim 13, wherein the RFIC unit is operated using an industrial, scientific and medical (ISM) band or higher.
- [c19] 19. The method of claim 13, further comprising a step of selecting the transmitting RF signal and the receiving RF signal, when the second antenna is chosen for both use in the transmitting mode and the receiving mode.
- [c20] 20. The method of claim 13, wherein the method satisfies a protocol of IEEE 802.11b.